



Towards Designing Community Learning Platforms for Smallholding Organic Farming Practitioners in Phitsanulok Province

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Abstract

Smallholding Organic Farming Practitioners (SOFPs) play a vital role in sustainable agriculture, yet they often lack access to suitable Community Learning Platforms (CLPs). This study examines how CLPs function among SOFPs in Phitsanulok Province, Thailand, focusing on the learning spaces through which knowledge exchange occurs and the structural conditions that shape these learning processes. The research employed a qualitative grounded theory approach, combining documentary research with digital ethnography through interviews, field observations, and analysis of online interactions with 28 practitioners across 16 farms in Phitsanulok Province, Thailand. The findings indicate that personal experiences and local contexts shape CLPs, yet these learning systems remain fragmented and loosely structured. Learning occurs across six physical spaces—farms, marketplaces, government and academic venues, private settings, and community learning centres—and one virtual space through digital platforms. While these spaces facilitate knowledge exchange, they often lack coherence and continuity, limiting their effectiveness and their capacity to adapt to changing conditions. The study highlights the need to strengthen CLPs through community-based management, sustained participation, and adaptive systems responsive to social and geographic contexts. Strengthening these platforms is essential for enhancing resilience, adaptive capacity, and the long-term sustainability of small-scale organic farming communities.

Keywords: Community Learning Platforms, Organic Farming Practitioners, Smallholdings

Introduction

Organic farming has gained global recognition as a pathway to sustainable local food systems, environmental stewardship, and community resilience (Pretty, 2018; Blay-Palmer et al., 2021; Altieri & Nicholls, 2020). Organic farming in Thailand has received increasing attention for its social, environmental, and economic benefits. Existing research highlights its role in supporting community-based tourism (Mankong et al., 2021), strengthening knowledge management in farmer groups (Singchai, 2023), and integrating Buddhist values into rice cultivation (Limprapooiwattana, 2023). These developments align with broader global and national agendas promoting sustainable development, including Thailand's Bio-Circular-Green (BCG) Economy Model, which emphasises sustainable agriculture, resource efficiency, and community-based innovation.

Though these studies demonstrate the multifaceted contributions of organic farming, systematic analysis of the relationship between policy frameworks, conceptualisations of smallholding, and the organisation of farmers' learning systems remains limited. Because policy frameworks shape the institutional organisation of agricultural knowledge, the way smallholding is conceptualised carries important implications for how learning systems are structured.

When smallholding is narrowly defined in terms of land size and rural location, learning initiatives tend to prioritise technical productivity, certification compliance, and standardised training models. By contrast, when smallholding is understood as embedded within ecological, social, and ethical relationships, learning processes must accommodate context-specific problem solving, peer interaction, and experiential adaptation. Conceptual



framings of smallholding therefore shape not only policy orientation but also the epistemic organisation of agricultural learning.

European and British perspectives further frame smallholding as a way of inhabiting land in relation to ecological and social systems rather than merely as a unit of production (van der Ploeg, 2008; Altieri, 2018). For Smallholding Organic Farming Practitioners (SOFPs) in Thailand, adopting this broader relational lens allows farming to be understood as culturally and ecologically embedded practice, thereby reinforcing the need for learning systems that are socially mediated, adaptive, and community-based.

However, traditional schools, local administrations, and government programs often provide generalised knowledge that does not align with the specific contexts of SOFPs in Phitsanulok Province. Previous research on “Sustainable Drought Management in Smallholding Organic Farm on High Ground” and “Knowledge Management in Smallholding Organic Farms for Sustainable Food Security” (Naowakate, 2022; Naowakate & Sirasoonthorn, 2022) identified four empirical cases reflecting different patterns of organising knowledge and practice among smallholding organic farmers. Analysis of these cases revealed a structural gap between formal extension systems and practitioners’ lived realities, where institutional knowledge frameworks were insufficiently contextualised, fragmented, and weakly integrated across physical and digital spaces. Under these conditions, practitioners developed four adaptive learning configurations—culture-based, leadership-based, partnership/community-based, and biological-based—which should be understood not merely as descriptive categories, but as emergent modes of organising learning under institutional constraint. These patterns point to the importance of Community Learning Platforms (CLPs) as the organisational structures through which learning is coordinated across fragmented physical and digital spaces. Similar barriers and opportunities in digital agricultural learning have been identified in recent systematic reviews of digital extension systems (Sen et al., 2025).

In this study, CLPs are conceptualised as socio-institutional arrangements that connect formal expertise, experiential practice, and community-based interaction. This pattern is also reflected in broader studies highlighting limited confidence in sustainable practices and insufficient technical skills among smallholders (Do & Mulia, 2018). Such fragmentation provides important context for understanding why practitioners in this study developed adaptive learning configurations as alternative ways of organising knowledge under institutional constraint. Scholars therefore emphasise integrating indigenous and scientific knowledge, as well as adopting participatory approaches, to address these structural gaps (Wang, 2018; Wiedemann et al., 2022). These observations suggest that existing learning systems still fail to fully support the situated processes required by SOFPs.

In Phitsanulok Province, smallholder farming remains a dominant agricultural structure, with many farmers operating on limited land areas and engaging in multi-occupational livelihoods. Organic farming initiatives have expanded in recent years through farmer networks, local markets, and participatory certification schemes. However, learning opportunities remain unevenly distributed, and farmers frequently rely on fragmented sources of information, including informal peer exchanges and social media platforms. While digital resources are widely available, the organisation and coordination of learning processes within local farming communities remain unclear.

Within this context, the Songkwae Organic Network (SKON), founded in 2018, represents a loosely collaborative group of largely multi-occupational SOFPs who share the goal of contributing to food safety and sustainability through the Participatory Guarantee System (PGS) of IFOAM. Despite exposure to formal training and community schools, members continue to require practical support, market access, and marketability skills. The relatively high educational attainment of participants suggests that fragmentation cannot be reduced to a deficit



of formal knowledge. Rather, it reflects structural misalignment between institutional expertise and situated agro-ecological practice, underscoring the limits of decontextualised extension frameworks (Lave & Wenger, 1991; Šūmane et al., 2018).

Initiatives among SOFPs remain loosely structured, echoing longstanding critiques of traditional extension models—such as the Training and Visit system—for their rigidity and limited responsiveness to smallholder contexts (Musa et al., 2013), despite recent reforms that increasingly promote participatory, context-sensitive approaches (Prajapati et al., 2025). These structural conditions point to the need for more coherent organisational arrangements through which knowledge can be coordinated, contextualised, and sustained. CLPs are therefore conceptualised in this study as mechanisms that mediate between institutional expertise and situated agro-ecological practice.

Against this backdrop, and drawing on the case of the Songkwae Organic Network (SKON), this study examines how Community Learning Platforms (CLPs) function among Smallholding Organic Farming Practitioners (SOFPs) in Phitsanulok Province and analyses the forms of learning that may enhance or constrain the sustainability and organisational coherence of smallholding organic farming.

Review of Related Literature

Organic Farming in Thailand

In Thailand, organic farming is often associated with traditional agricultural practices. While more recent initiatives have introduced innovative approaches, such as design thinking and community-based education, enhance entrepreneurial skills among organic farmers (Meekaew & Chamaratana, 2024). Meanwhile, studies on farmers' perceptions and adoption of organic rice farming (Cavite et al., 2022) and group adaptation in Northern Thailand (Jumpanyarach, 2021) illustrate evolving dynamics. Broader contributions include environmental protection and social well-being (Khoso et al., 2021), alongside calls for improved fertilisers and sustainable land management practices (Salaisook et al., 2020). Achieving these outcomes, however, requires not only technical adjustments but coordinated learning processes through which knowledge can be contextualised, shared, and sustained. Therefore, CLPs provide a potential organisational mechanism for facilitating such integration across ecological, social, and institutional domains.

Beyond reducing chemical inputs, organic farming represents a movement for healthy food, ecological balance, and food sovereignty (Jumpanyarach, 2021; Meekaew & Chamaratana, 2024). It emphasises biodiversity, sustainability, and natural cultivation methods (Gamage et al., 2023; Oberč & Arroyo Schnel, 2020; Thakur et al., 2022). Globally organic farming has expanded in response to industrialised agriculture, driven by concerns over food safety, quality, and human health (Kumar et al., 2023; Roslund et al., 2020). For SOFPs, learning extends beyond technical practices and certification to encompass values of community responsibility and ecological stewardship. From an adult learning perspective, this reflects the transformative and experiential dimensions of learning, where meaning is constructed through reflection on lived practice and social interaction (Mezirow, 1991; Kolb, 1984; Lave & Wenger, 1991). Bridging knowledge gaps therefore requires peer-to-peer and situated learning processes rather than solely top-down instruction. From a socio-ecological systems perspective, such learning must operate across ecological, social, and institutional domains, balancing environmental sustainability, economic viability, and social well-being within interconnected human-environment systems (Berkas & Folke, 1998; Folke, 2006).



Within Thailand's organic farming practices, CLPs have emerged as essential mechanisms for supporting smallholder development. In this study, CLPs are conceptualised as structured yet adaptive socio-institutional infrastructures that organise learning across fragmented physical and digital environments, mediate between institutional expertise and situated agro-ecological practice, and provide spaces for experiential reflection, peer interaction, and collective problem-solving that enable adaptive transformation within smallholder systems.

Research shows that community-based learning and design thinking enhance entrepreneurial skills (Meekaew & Chamaratana, 2024) while generosity and social interaction sustain organic food communities (Maneesiri et al., 2024). Urban organic movements in Bangkok resemble New Social Movements (Bopp, 2016), and organic farming more broadly contributes to rural socio-economic development (Suindramedhi et al., 2016).

Empirical initiatives further illustrate these dynamic. For example, the Sampran Riverside Model demonstrates how diverse stakeholders—later formalised in the Thai Organic Consumer Association (TOCA)—leveraged digital platforms to connect producers and consumers, with success factors including social capital, knowledge support, and market access (Chinvarasopak, 2015). Peri-urban farming initiatives also illustrate contributions to the SDGs through participatory empowerment approaches (Sumardjo et al., 2022).

Together, these cases highlight the importance of coordinated learning infrastructures that integrate knowledge exchange, market linkage, and stakeholder collaboration. However, unlike these relatively structured initiatives, the CLPs examined in this study emerge within loosely organised smallholder networks, where learning coordination remains fragmented and institutionally under-supported.

Organic farming learning platforms in Thailand reflect broader innovations across education and urban governance, including community learning centres, learning city initiatives, participatory spatial design, and digital coordination mechanisms (Thongdee et al., 2022; Thummaphan & Sripa, 2023; Iamtrakul et al., 2023; Kattiyapornpong et al., 2022) and Thailand organic network of farmer collaboration (Phromthep & Torut, 2024). Globally, similar CLPs have supported resilience during crises, including community responses to COVID-19 in developing contexts (Koroma et al., 2022). These initiatives demonstrate the growing institutionalisation of platform-based coordination across sectors. However, much of the existing literature foregrounds structural arrangements, governance models, and technological infrastructures, while giving comparatively limited attention to how learning processes unfold within such platforms—particularly in smallholder agricultural contexts. This gap is significant, as understanding how knowledge is produced, negotiated, and sustained within CLPs is essential for addressing fragmentation and strengthening adaptive capacity among SOFPs.

Smallholding and Farming Practices

Scholars contest the meaning of *smallholding*, and its interpretation depends on context. In Thailand, government discourse typically reduces smallholding to land size and rural location, aligning it with “small farms”. Nevertheless, as Holloway notes, smallholding also involves ethical, discursive, and material relationships between humans and non-humans (Holloway, 2002). Broader socio-economic changes across Asia—including rising incomes, urbanisation, and declining agricultural labour—have prompted discussions of a “farm-size transition”. However, such patterns do not universally apply and remain context-specific (Promkhambut et al., 2023). Narrow or inconsistent definitions of smallholding directly affect policy and extension services, often leading to mismatched support for farmers.



Community Learning Platforms (CLPs)

The concept of community has long been debated across disciplines, reflecting its fluid, contested, and multi-dimensional nature. Scholars have framed it variously as a collective sharing common values and practices (Rein & Schön, 1996), a dynamic communication system (Connell, 2006), or a place-based entity resisting globalisation (López, 2020). Its interpretation shifts across fields—from social work (Pradeep & Sathyamurthi, 2017) to archaeology (Agbe-Davies, 2010)—and perspectives diverge between insiders and outsiders (Jewkes & Murcott, 1996).

Community is therefore understood in this study not as a fixed territorial structure, but as a relational and practice-based process constituted through shared meanings, agricultural activities, and collective action (Graham, 2005). This relational and situated understanding provides the conceptual foundation for CLPs, which are defined here as organised yet adaptive spaces in which knowledge is collectively created, exchanged, and transformed. By grounding CLPs in relational community processes, the study highlights how such platforms can function as infrastructures for lifelong and transformative learning—particularly within smallholder organic farming, where practice, identity, and adaptation are deeply intertwined.

Knowledge Gaps in the Literature

Despite this growing body of research, several limitations persist. The concept of smallholding remains narrowly defined in Thai and regional studies, often overlooking ethical, socio-ecological, and discursive dimensions that are emphasised in other contexts (Holloway, 2002; Promkhambut et al., 2023). Research on organic farming is dispersed across themes such as knowledge management, entrepreneurship, and cultural values, yet these perspectives are rarely integrated into a cohesive analytical framework.

Similarly, studies on CLPs tend to focus on institutional structures and physical or digital settings rather than examining how learning processes unfold in practice. Reflection, dialogue, intergenerational exchange, and practice-based dilemmas remain comparatively underexplored. Longitudinal analysis of platform evolution and comparative studies linking Thai experiences with international models—such as British smallholdings or Scottish crofting—are also limited.

Furthermore, while digital platforms and urban innovation initiatives are frequently highlighted as enabling mechanisms, their implications for rural-urban link and access for learning participation require closer examination. Certification and food trust mechanisms (Grovermann et al., 2024), including the PGS, are typically treated as technical or market instruments, with less attention to their role in shaping learning dynamics and farmer-consumer relationships. Together, these gaps indicate the need for a more integrated analysis that connects adult learning theory with situated smallholder practice within Thailand's socio-cultural and ecological contexts.

Methods and Materials

This study is designed as a qualitative research design to examine how learning processes unfold within CLPs among SOFPs. The research was guided by Constructivist Grounded Theory (cGT) as the primary analytical framework to explore how participants construct meaning, negotiate knowledge, and organise learning within community contexts (Charmaz, 2006, 2014). Digital ethnography was used as a complementary approach to capture learning interactions occurring through online platforms and social media networks (Hine, 2015; Pink et al., 2015). The integration of grounded theory and digital ethnography enabled analysis of learning processes across both physical and digital environments.



The study was conducted in Phitsanulok Province, Thailand. Twenty-eight SOFPs from four districts—Muang, Wang Thong, Noen Maprang, and Wat Bot—participated in the research. Participants operated farms of varying scales and represented diverse educational backgrounds, cultural contexts, and motivations for engaging in organic farming. Besides, the participants were selected through purposive sampling to ensure variation in farm size, farming experience, and management practices. Most participants were members of the Songkwae Organic Network (SKON), a local organic farming network established in 2018. As analytical categories emerged during the research process, theoretical sampling was applied to refine developing concepts and deepen understanding of emerging patterns.

Then, data were collected through multiple qualitative methods. Twenty-eight in-depth semi-structured interviews were conducted with practitioners across sixteen farms. Interviews explored participants' experiences of learning organic farming practices, their interactions with training institutions, and their engagement with community-based learning activities. In addition, onsite observations documented farming practices, community meetings, and market interactions, providing contextual insights into everyday agricultural activities and challenges faced by smallholder farmers.

Digital ethnographic data were collected through the analysis of online discussions, shared posts, and communication exchanges related to organic farming practices within relevant social media networks. These digital interactions provided insights into how farmers exchange knowledge, discuss challenges, and seek advice within online learning communities. As well as a review of sixty-eight academic and grey literature sources (2014–2025) was conducted to provide contextual background and enhance theoretical sensitivity. These materials informed the analytical framework but were not coded as empirical data within the grounded theory analysis.

Finally, the data analysis followed the procedures of cGT. Interview transcripts, field notes, and digital observations were first analysed through open coding to identify initial concepts. Axial coding then explored relationships among emerging categories, particularly regarding learning interactions, institutional influences, and community dynamics. Selective coding subsequently integrated these categories into a conceptual model explaining how CLPs function within smallholder organic farming systems. Furthermore, throughout the analysis, constant comparison was applied across interviews, observations, and digital interactions, allowing categories to be refined through iterative interpretation across both online and offline learning contexts. This process resulted in the development of an emergent conceptual framework describing CLPs as socio-relational learning infrastructures.

Results

Overview

This study found that conventional farming techniques remain prevalent among many SOFPs in the province, creating both opportunities and constraints for learning processes. Nonetheless, a gradual shift among some practitioners toward organic methods emphasising natural inputs, crop rotation, and ecological balance. This pattern suggests that the transition toward organic farming among SOFPs tends to occur gradually rather than through abrupt change. They must manage risks associated with crop yields, income stability, market uncertainty, and access to organic inputs. In addition, limited access to specialised knowledge required for managing organic farming systems, together with the continuing influence of industrial agricultural knowledge frameworks embedded in conventional extension systems, constrains the adoption of fully organic practices. These systems typically prioritise technical productivity and monocultural production. Under such conditions, practitioners are compelled to



experiment with and develop alternative knowledge practices in order to adapt their farming systems toward more ecologically balanced approaches.

However, local agricultural offices do not maintain consolidated records distinguishing organic from conventional smallholders, making precise quantification difficult. SOFPs described organic engagement as fluid rather than fixed, with some identifying as full-time producers and others as part-time or hobby farmers. Motivations expressed in interviews included health concerns, personal recovery experiences, environmental stewardship, lifestyle values, and community identity. These variations contribute to a heterogeneous yet relationally connected network, characterised by shared participation in markets, knowledge exchange, and the PGS.

Existing learning platforms within this context include informal peer-to-peer exchanges at local markets, farm visits and excursions, workshops organised by NGOs and local councils, short-term training sessions provided by government agencies, and emerging digital communities on social media. However, these platforms remain fragmented in coordination and continuity. Interview data suggest challenges in integrating agroecological principles with formal certification requirements, limited follow-up mechanisms after training sessions, and uneven access to learning opportunities across districts. As a result, practitioners engage in multiple learning spaces that generate valuable knowledge, yet these interactions are not consistently consolidated into sustained, community-wide learning infrastructures.

Local Knowledge and Gaps

Interviews revealed significant limitations in how SOFPs conceptualised cultivation and organic farming. Interview data indicate that many respondents equated cultivation with simply “planting” and organic practices with “farming without pesticides”. Such responses reflect a narrow perception of farming that overlooks broader dimensions, including soil health, nutrient management, seed selection, water regulation, and adaptation to microclimatic variation. They also indicate limited articulation of the socio-cultural dimensions of farming, even though these were observable in practices such as labour sharing, community festivals, and local seed preservation.

While practical knowledge is present, it remains fragmented and insufficiently integrated into a holistic understanding of organic agriculture. Turning points—such as health crises, market encounters, or environmental stressors—frequently prompted participants to reassess their practices and experiment with more sustainable approaches. This pattern suggests that learning and transformation often occur reactively in response to external pressures rather than through proactive, systematic knowledge development.

Learning Spaces

Initial open coding of interview transcripts and field notes generated multiple references to places where learning occurred, including farms, markets, training venues, homes, community centres, events, and online platforms. Through axial coding, these references were grouped into seven distinct learning spaces: six physical spaces—farms, markets, government and academic venues, private or farm settings, community learning centres, and temporary events—and one virtual space accessed through digital platforms such as Facebook, YouTube, and TikTok with LINE as a group conference and meetings venue.

Participants described farms as sites of experimentation and tacit knowledge exchange, while markets functioned as spaces of feedback, negotiation, and peer interaction. Government and academic venues were associated with formal instruction, although often perceived as insufficiently contextualised. Community learning centres and temporary events served as entry points for newcomers, and private settings enabled small-scale trials and



innovation. Digital platforms provided immediate and flexible access to information, though participants frequently noted variability in content quality.

Constant comparison across cases revealed that these learning spaces operated largely in parallel rather than as coordinated components of an integrated system. The fragmentation observed across physical and digital environments later informed the conceptualisation of CLPs as mechanisms for organising dispersed learning processes into more coherent structures.

Patterns of Practice

Grounded theory analysis generated four core categories that represent distinct orientations of practice among participants. These emergent constructs are conceptualised as: 1) culture-based orientation, rooted in shared values, traditions, and local norms, 2) leadership-based orientation, organised around influential individuals who coordinate standards, tasks, and group direction, 3) partnership-based orientation, centred on collaboration and participatory mechanisms such as the PGS, and 4) biological-based orientation, focused on ecological principles and agro-technical experimentation. While analytically distinct, these orientations often overlapped in practice and reflected different modes of organising learning within fragmented environments.

In addition to these four constructs, constant comparison revealed a recurring processual pattern across cases. This emergent learning cycle can be conceptualised as an iterative sequence: questioning existing practices, seeking information from multiple sources, conducting small-scale trials, revising methods, cautiously expanding implementation, obtaining market feedback, and progressively aligning production with recognised standards. Rather than representing isolated actions, this cycle constitutes a grounded process model of adaptive learning among SOFPs. It illustrates how adult learning unfolds dynamically through the interaction of personal initiative, ecological experimentation, and community engagement.

Economic Significance

Although many participants described their farms as hobbies, supplemental income sources, or retirement ventures, interview data indicate that these activities contributed meaningfully to household livelihoods. Participants estimated that organic farming generated approximately 10–40% of total household income for part-time producers, while full-time practitioners reported that it constituted their primary source of earnings. Several farms employed one to three local workers on a seasonal or part-time basis, particularly during planting and harvesting periods.

Interview participants frequently emphasised reputational benefits, particularly increased trust from consumers through local markets and PGS participation. Environmental stewardship was also consistently highlighted, with respondents describing efforts to conserve soil, protect biodiversity, reduce chemical inputs, and adopt eco-friendly production methods.

Despite these contributions, market access remained constrained. Participants reported fluctuating consumer demand, limited distribution channels, and uneven public awareness of organic standards. Many perceived governments support as insufficiently tailored to smallholder realities, calling for improved incentives, technical training, and stronger facilitation of local market linkages.

Emergence of Digital Spaces

The digital ethnography revealed that members of the SKON actively engage across multiple online spaces, including Facebook groups, the TOCA platform, LINE chat groups, and informal digital marketplaces.



These platforms function not only as communication channels but also as distributed learning environments, extending interaction beyond farms and markets into continuous digital exchange.

Grounded analysis of online interactions generated three interrelated themes. First, digital spaces support self-directed learning and peer knowledge exchange. Practitioners regularly share posts on pest management, seasonal variability, crop rotation strategies, and field experimentation, often accompanied by photographs and brief reflections. These exchanges illustrate reflection-in-action, where immediate challenges are collectively interpreted and addressed. Second, digital platforms operate as arenas of identity construction and trust formation. Posts highlighting organic practices, certification documents, and consumer testimonials serve not only marketing functions but also symbolic functions, reinforcing credibility and social recognition within and beyond the network. Third, digital engagement enhances market visibility and consumer interaction, allowing practitioners to gather feedback, building up trust and market size, and maintain direct buyer relationships.

However, digital ethnography also revealed a significant tension between narrative representation and material practice. Online portrayals of organic quality are frequently inspirational and aesthetically curated, sometimes projecting idealised images of ecological harmony. Yet interview data and field observations indicate that on-farm realities involve experimentation, uncertainty, and compromise. This divergence does not necessarily imply misrepresentation; rather, it reflects the performative dynamics of digital trust-building, where visibility and credibility must be continuously negotiated. The tension between romanticised representation and situated practice constitutes an analytically significant feature of digital CLPs, shaping how knowledge, legitimacy, and identity circulate within smallholder networks.

At the same time, learning across digital platforms remains fragmented. Access is uneven across generations and districts, and limited integration with physical learning spaces constrains cumulative knowledge development. Thus, while digital interaction extends the community of practice into virtual domains, it also reveals the need for more coherent mechanisms that align narrative, practice, and verification.

Barriers and Challenges

Grounded analysis revealed multiple barriers for SOFPs learning systems that can be grouped into five interrelated categories: institutional, structural, market, relational, and personal constraints. These barriers are illustrated in Figure 1.

Barriers Affecting Learning Among Smallholding Organic Farming Practitioners (SOFPs)

Findings from grounded analysis of Community Learning Platforms



Figure 1 SOFP Learning System in the centre, surrounded by five barrier categories.

Source from Urban Community Learning Platforms for Smallholding Ecological Organic Farming Practitioners. (Naowakate, 2025)

Taken together, the findings indicate that SOFP learning in Phitsanulok is characterised by active engagement yet structural fragmentation. Practitioners demonstrate initiative through experimentation, peer exchange, and adaptive modification of techniques. However, the dispersed nature of learning spaces—spanning markets, workshops, farms, and digital platforms—combined with generalised institutional training and limited inter-farm coordination, constrains continuity and collective consolidation.

Digital ethnography further illustrates that online platforms expand peer-to-peer exchange, identity formation, and consumer trust-building. Yet these interactions remain unevenly accessible and weakly integrated with offline learning environments. Practitioners therefore operate within a mosaic of physical and virtual spaces in which knowledge circulates dynamically but lacks sustained organisational coherence.

These findings suggest that strengthening CLP requires greater integration across physical and digital learning spaces. Coordinated mechanisms linking farms, markets, training institutions, and digital networks could support more continuous knowledge exchange and reduce fragmentation in existing learning systems. Such integration may enhance farmers' capacity to experiment, share experiences, and collectively develop locally adapted organic farming practices.



Discussion and Conclusion

This section interprets the findings in relation to Transformative Learning Theory (TLT) and explores its relevance to CLPs. The results show that learning among SOFPs in Phitsanulok Province is active but structurally fragmented, occurring across multiple physical and digital environments with limited coordination between them. Similar processes of experiential transformation have been observed among organic farmers transitioning from conventional practices (Widiyanti et al., 2024). By situating these findings within existing literature on adult learning and community-based knowledge systems, the discussion examines three interrelated dimensions: the role of CLPs as distributed learning infrastructures, the ways transformative learning unfolds within these platforms, and the socio-cultural and policy conditions that shape learning processes in smallholding organic farming.

These findings are also relevant to broader sustainable development agendas, particularly Sustainable Development Goal 2 (Zero Hunger), which emphasises sustainable agricultural systems, and Sustainable Development Goal 4 (Quality Education), which promotes lifelong and inclusive learning opportunities. Strengthening CLPs may therefore contribute not only to local agricultural innovation but also to wider sustainability transitions.

Community Learning Platforms as Distributed Learning Systems

The findings of this study reveal that learning among SOFPs in Phitsanulok Province is active yet structurally fragmented. Participants frequently engage in experimentation, reflection, and adaptation of farming practices. However, continuity across learning environments remains limited due to generic training programs, weak institutional coordination, and unstable market conditions. These findings resonate with earlier research suggesting that smallholder learning often occurs through dispersed networks rather than formal educational systems (Kilpatrick et al., 2003; Šūmane et al., 2018). In the Thai policy context, these findings also resonate with the principles of the Bio-Circular-Green (BCG) Economy Model (Office of National Higher Education Science Research and Innovation Policy Council, n.d.), which emphasises sustainable resource use, ecological production systems, and community-based innovation. By facilitating knowledge exchange, local experimentation, and farmer collaboration, CLPs can function as practical mechanisms through which BCG-oriented agricultural development is enacted at the community level.

Within this context, CLPs can be understood as socio-relational infrastructures that organise learning across both physical and digital environments. Rather than functioning as a single institutional mechanism, CLPs emerge through interactions among farmers, community organisations, markets, and online networks. In the case of the SKON, seven learning spaces—six physical and one digital—served as nodes through which knowledge circulated. Farms provided sites for experimentation and observation, markets facilitated interaction with consumers and feedback on product quality, community gatherings enabled peer exchange, and digital platforms supported ongoing communication among practitioners. However, these spaces often operated independently rather than as a coordinated learning system, requiring farmers to navigate fragmented learning pathways.

Transformative Learning within Community Learning Platforms

Transformative Learning Theory (TLT) provides a useful framework for interpreting how learning unfolds within these distributed environments. TLT emphasises that adult learning often occurs when individuals encounter disorienting dilemmas that challenge existing assumptions and prompt reflection and dialogue (Mezirow, 2000; Illeris, 2014; Taylor, 2008). In this study, such dilemmas frequently emerged through experiences such as health concerns related to pesticide exposure, environmental changes affecting crop productivity, or market encounters

that questioned the viability of conventional farming practices. These experiences motivated farmers to experiment with organic methods and to reconsider previously accepted agricultural knowledge.

However, the findings suggest that transformation within CLPs differs from the individualised processes commonly described in TLT literature. Learning among SOFPs often occurred through collective interactions rather than individual reflection alone. Farm visits, collaborative experimentation, and online exchanges enabled practitioners to compare practices, discuss failures, and refine techniques together. Similar socially embedded learning processes have been identified in studies of agroecological transitions and farmer knowledge networks (Šūmane et al., 2018; Sáenz et al., 2024; Widiyanti et al., 2024). These findings indicate that transformative learning in smallholding organic farming is not solely cognitive but is relational and practice-based, emerging through ongoing interaction among farmers, markets, and institutions.

Cultural Practices as Learning Resources and Constraints

Socio-cultural practices also play a significant role in shaping learning processes within smallholder farming communities. Field observations identified several cultural activities that facilitated knowledge exchange, including labour sharing, seed preservation, community festivals, and informal gatherings at markets. These practices create opportunities for farmers to observe techniques, exchange experiences, and build trust within their networks. In this sense, cultural traditions function as informal learning infrastructures that support the circulation of local ecological knowledge.

At the same time, cultural dynamics can also constrain learning processes. Hierarchical social relations, reluctance to challenge established practices, and the influence of externally introduced technical frameworks sometimes limited open dialogue about experimentation or farming failures. Nevertheless, the study also identified situations in which cultural practices supported adaptive learning. Community seed exchange events encouraged experimentation with locally adapted crop varieties, while local markets provided spaces for direct interaction between producers and consumers, generating feedback that influenced farming decisions. These observations suggest that cultural practices should be recognised both as resources and as contextual factors shaping knowledge exchange within community-based agricultural systems.

Policy Implications for Agricultural Learning Systems

These findings also relate to national initiatives aimed at strengthening agricultural human capital, such as Thailand's Young Smart Farmer programme (Tikum & Ahmad, 2024). While such programmes aim to develop technologically capable and entrepreneurial farmers, the experiences of SOFPs in this study suggest that effective learning systems must extend beyond technical training. Farmers require platforms that support peer exchange, experiential experimentation, and locally contextualised problem solving in order to sustain long-term agroecological innovation (Musa et al., 2013; Rijswijk et al., 2019).

Policy frameworks could therefore shift from centralised training approaches toward more integrated Community Learning Platforms that support peer mentoring, collaborative experimentation, and locally adapted learning processes. Integrating physical learning spaces with digital platforms could enable farmers to access context-specific knowledge while maintaining continuity across learning environments.

Participatory certification mechanisms such as the PGS could also play a more active role in these learning systems (Winkler et al., 2024). Beyond functioning as certification tools, PGS networks can operate as platforms for knowledge exchange, collaborative problem solving, and trust-building between producers and consumers



(Home et al., 2017). Strengthening such community-based certification systems may therefore enhance both the credibility of organic products and the sustainability of learning processes among smallholding farmers.

Strengthening such community-based certification systems may therefore enhance both the credibility of organic products and the sustainability of learning processes among smallholding farmers. In this sense, Community Learning Platforms can be understood not only as educational mechanisms but also as socio-institutional infrastructures that support sustainable agriculture, rural livelihoods, and community resilience.

Conclusion

This study demonstrates that learning among Smallholding Organic Farming Practitioners (SOFPs) in Phitsanulok Province is active yet structurally fragmented. Farmers engage in experimentation, reflection, and adaptation of practices; however, the absence of integrated learning infrastructures limits the continuity and depth of transformative learning processes.

By integrating insights from Transformative Learning Theory with the concept of Community Learning Platforms, this study contributes to understanding how learning in smallholding organic farming is shaped not only by individual reflection but also by collective interaction, cultural practices, and institutional conditions. The findings suggest that transformation occurs when experiential experimentation, peer dialogue, and market feedback become structurally connected across multiple learning environments.

Strengthening Community Learning Platforms could therefore provide a pathway for more coherent and context-sensitive agricultural learning systems. Platforms that integrate farms, markets, community organisations, and digital networks may enable farmers to move beyond fragmented learning experiences toward sustained adaptive and transformative learning.

Such developments are essential for supporting the livelihoods of smallholding organic farmers and for advancing broader transitions toward sustainable and resilient food systems. In particular, strengthening community-based learning infrastructures contributes to the objectives of Zero Hunger through sustainable agriculture (SDG 2: targets 2.3 and 2.4), Quality Education through lifelong and community-based learning (SDG 4: target 4.7), and Responsible Consumption and Production (SDG 12).

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Conflict of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Author Contributions

Oranut Naowakate: Conceptualisation, Methodology, Investigation, Data Curation, Formal Analysis, Digital Ethnography, Writing–Original Draft, Visualisation.

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All authors have read and approved the final version of the manuscript.

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During the preparation of this manuscript, the authors used OpenAI ChatGPT as a language–support and academic writing assistance tool. ChatGPT was also used to support discussion and reflection on coding structures, category development, and manuscript organisation. All interview data, observations, coding decisions, interpretations, category development, and research conclusions were conducted and verified by the authors following the principles of Grounded Theory. The authors reviewed and edited all AI-generated content and take full responsibility for the accuracy, integrity, and originality of the manuscript.

References

- Agbe–Davies, A. S. (2010). Concepts of community in the pursuit of an inclusive archaeology. *International Journal of Heritage Studies*, 16(6), 373–389. <https://doi.org/10.1080/13527258.2010.510923>
- Altieri, M. A. (2018). *Agroecology: The science of sustainable agriculture*. CRC Press.
- Altieri, M. A., & Nicholls, C. I. (2020). Agroecology: Challenges and opportunities for farming in the anthropocene. *International Journal of Agriculture and Natural Resources*, 47(3), 204–215. <https://doi.org/10.7764/ijanr.v47i3.2281>
- Berkes, F., & Folke, C. (Eds.). (1998). *Linking social and ecological systems: Management practices and social mechanisms for building resilience*. Cambridge University Press.



- Blay-Palmer, A., Santini, G., Halliday, J., Malec, R., Carey, J., Keller, L., Ni, J., Taguchi, M., & van Veenhuizen, R. (2021). City region food systems: Building resilience to COVID-19 and other shocks. *Sustainability*, 13(3), 1325. <https://doi.org/10.3390/su13031325>
- Bopp, J. (2016). *New momentum to Bangkok's organic food movement: Interspersed scenes led by mindful pioneers* [Doctoral Dissertation, Universität zu Köln]. Cologne University Publication Server. <https://kups.ub.uni-koeln.de/6935/>
- Cavite, H. J., Kerdsriserm, C., Llonas, C., Direksri, N., & Suwanmaneepong, S. (2022). Farmers' perception of consumer information and adoption intention towards organic rice farming: Evidence from community enterprise in rural Thailand. *Outlook on Agriculture*, 52(1), 79–88. <https://doi.org/10.1177/00307270221135250>
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Sage Publications.
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Sage Publications.
- Chinvarasopak, P. (2015). Key factors affecting the success of organic agriculture in Thai communities: Three case studies in Ubon Ratchathani and Srisaket Provinces. *Journal of Public Administration, Public Affairs, and Management*, 13(2), 105–130. <https://pa.gspajournal.com/issue/thai-journal-of-public-administration-volume-13-number-2/>
- Connell, J. (2006). Medical tourism: Sea, sun, sand and ... surgery. *Tourism Management*, 27(6), 1093–1100. <https://doi.org/10.1016/j.tourman.2005.11.005>
- Do, T. H., & Mulia, R. (2018). Constraints to smallholder tree planting in the northern mountainous regions of Viet Nam: A need to extend technical knowledge and skills. *International Forestry Review*, 20(1), 43–57. <https://doi.org/10.1505/146554818822824246>
- Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16(3), 253–267. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>
- Gamage, A., Gangahagedara, R., Gamage, J., Jayasinghe, N., Kodikara, N., Suraweera, P., & Merah, O. (2023). Role of organic farming for achieving sustainability in agriculture. *Farming System*, 1(1), 100005. <https://doi.org/10.1016/j.farsys.2023.100005>
- Graham, G. (2005). Community networking as radical practice. *The Journal of Community Informatics*, 1(3), 4–12. <https://doi.org/10.15353/joci.v1i3.2028>
- Grovermann, C., Van Hoi, P., Yen, N. T. B., Schreinemachers, P., Hai, M. N., & Ferrand, P. (2024). Impact of participatory guarantee systems on sustainability outcomes: The case of vegetable farming in Vietnam. *International Journal of Agricultural Sustainability*, 22(1), 2338028. <https://doi.org/10.1080/14735903.2024.2338028>



- Hine, C. (2015). *Ethnography for the internet: Embedded, embodied and everyday*. Routledge. <https://doi.org/10.4324/9781003085348>
- Holloway, L. (2002). Smallholding, hobby-farming, and commercial farming: Ethical identities and the production of farming spaces. *Environment and Planning A: Economy and Space*, 34(11), 2055–2070. <https://doi.org/10.1068/a34261>
- Home, R., Bouagnimbeck, H., Ugas, R., Arbenz, M., & Stolze, M. (2017). Participatory guarantee systems: Organic certification to empower farmers and strengthen communities. *Agroecology and Sustainable Food Systems*, 41(5), 526–545. <https://doi.org/10.1080/21683565.2017.1279702>
- Iamtrakul, P., Chayphong, S., & Crizzle, A. M. (2023). Impact of spatial configuration on promoting lifelong learning development in Pathum Thani, Thailand. *Sustainability*, 15(14), 10791. <https://doi.org/10.3390/su151410791>
- Illeris, K. (2014). *Transformative learning and identity*. Routledge.
- Jewkes, R., & Murcott, A. (1996). Meanings of community. *Social Science & Medicine*, 43(4), 555–563. [https://doi.org/10.1016/0277-9536\(95\)00439-4](https://doi.org/10.1016/0277-9536(95)00439-4)
- Jumpanyarach, W. (2021). Organic agriculture: Farmers perception and adaptation in Northern Thailand. *Asian Journal of Agriculture and Rural Development*, 11(3), 245–254. <https://doi.org/10.18488/journal.ajard.2021.113.245.254>
- Kattiyapornpong, U., Ditta-Apichai, M., & Chuntamara, C. (2022). Exploring gastronomic tourism experiences through online platforms: Evidence from Thai Local Communities. In *Gastronomic tourism experiences and experiential marketing* (pp. 25–41). Routledge.
- Khoso, K. K., Buarod, T., & Kaewpijit, J. (2021). Sustainable impact of organic farming: A Social constructivist perspective. *Humanities, Arts and Social Sciences Studies*, 21(1), 150–161. <https://so02.tci-thaijo.org/index.php/hasss/article/view/218587>
- Kilpatrick, S., Barrett, M., & Jones, T. (2003). Defining learning communities. In P. L. Jeffery (Ed.), *New Zealand Association for Research in Education (NZARE) & Australian Association for Research in Education (AARE) International conference, Auckland, New Zealand, November 29–December 3, 2003*. <https://www.aare.edu.au/publications/aare-conference-papers/show/3853/defining-learning-communities>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Koroma, B., Macarthy, J. M., Conteh, A., & Osuteye, E. (2022). Sustaining community-based responses to the COVID-19 pandemic: Learning platforms at work in freetown, Sierra Leone. *Urbanisation*, 7(1), 17–29. <https://doi.org/10.1177/24557471221115030>



- Kumar, D., Willer, H., Ravisankar, N., Chandrabhanu, & Kumar, A. (2023). Current scenario of organic farming worldwide. In D. Kumar, N. Ravisankar, & A. Panghal (Eds.), *Transforming organic agri-produce into processed food products: Post-COVID-19 challenges and opportunities*. Apple Academic Press. <https://doi.org/10.1201/9781003329770-1>
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511815355>
- Limprapoowiattana, C. (2023). The art of buddhist connectivity: Organic rice farming in Thailand. *Agriculture and Human Values*, 40(3), 1087–1103. <https://doi.org/10.1007/s10460-022-10363-w>
- López, X. P.-S. (2020). Defining and theorizing place-based communities in the era of globalization. *RIPS*, 19(2), 107–120. <https://doi.org/10.15304/rips.19.2.6938>
- Maneesiri, P., Phlainoi, N., Makarabhirom, P., & Srijantr, T. (2024). Generosity development model of an organic food community in Thailand. *Humanities, Arts and Social Sciences Studies*, 24(1), 120–131. <https://doi.org/10.69598/hasss.24.1.260763>
- Mankong, S., Chaisaen, A., & Saentaweessook, S. (2021). The tourism management in the participatory organic farming way at Bankamkhonta Village, Yasothon Province, Thailand. *International Journal of Current Science Research and Review*, 4(9), 1101–1107. <https://doi.org/10.47191/ijcsrr/V4-i9-03>
- Meekaew, N., & Chamaratana, T. (2024). Cultivating entrepreneurial skills in organic farming with design thinking and community-based education. *International Journal of Learning, Teaching and Educational Research*, 23(5), 139–157. <https://doi.org/10.26803/ijlter.23.5.8>
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.
- Mezirow, J. A. (2000). *Learning as transformation: Critical perspectives on a theory in progress*. Jossey-Bass.
- Musa, Y. N., Aboki, E., & Audu, I. A. (2013). The limitations and implications of Training and Visit (T&V) extension system in Nigeria. *Journal of Agriculture and Sustainability*, 4(1), 67–76. <https://www.infinitypress.info/index.php/jas/article/viewFile/214/182>
- Naowakate, O. (2022). *Sustainable drought management in smallholding organic farm on high ground* [Master's thesis, Naresuan University]. NU Intellectual Repository. <https://nuir.lib.nu.ac.th/dspace/handle/123456789/5381>
- Naowakate, O. (2025). *Urban community learning platforms for smallholding ecological organic farming practitioners* [Doctoral dissertation, Naresuan University]. NU Intellectual Repository. <https://nuir.lib.nu.ac.th/dspace/handle/123456789/6895>
- Naowakate, O., & Sirasoonthorn, P. (2022). Knowledge management in smallholding organic farm for sustainable food security. *Journal of Community Development Research (Humanities and Social Sciences)*, 15(4), 29–42. <https://doi.org/10.14456/jcdr-hs.2022.33>



- Oberč, B. P., & Arroyo Schnel, A. (2020). *Approaches to sustainable agriculture: Exploring the pathways towards the future of farming*. IUCN, European Regional Office. <https://doi.org/10.2305/IUCN.CH.2020.07.en>
- Office of National Higher Education Science Research and Innovation Policy Council. (n.d.). *BCG in action*. Retrieved March 12, 2025, from <https://www.nxpo.or.th/th/en/bcg-in-action/>
- Phromthep, P., & Torut, B. (2024). Comparing the collaboration of smallholder farmers through participatory guarantee system practices in Northeastern Thailand. *Sustainability*, 16(10), 4186. <https://doi.org/10.3390/su16104186>
- Pink, S., Horst, H., Postill, J., Hjorth, L., Lewis, T., & Tacchi, J. (2015). *Digital ethnography: Principles and practice*. Sage Publication.
- Pradeep, M., & Sathyamurthi, K. (2017). Community social work: An evolutionary perspective. *International Journal of Research in Economics & Social Sciences*, 7(8), 110–118.
- Prajapati, C. S., Priya, N. K., Bishnoi, S., Vishwakarma, S. K., Buvaneswari, K., Shastri, S., Tripathi, S., & Jadhav, A. (2025). The role of participatory approaches in modern agricultural extension: Bridging knowledge gaps for sustainable farming practices. *Journal of Experimental Agriculture International*, 47(2), 204–222. <https://doi.org/10.9734/JEAI/2025/v47i23281>
- Pretty, J. (2018). Intensification for redesigned and sustainable agricultural systems. *Science*, 362(6417), eaav0294. <https://doi.org/10.1126/science.aav0294>
- Promkhambut, A., Yokying, P., Woods, K., Fisher, M., Yong, M. L., Manorum, K., Baird, I. G., & Fox, J. (2023). Rethinking agrarian transition in southeast asia through rice farming in Thailand. *World Development*, 169, 106309. <https://doi.org/10.1016/j.worlddev.2023.106309>
- Rein, M., & Schön, D. (1996). Frame-critical policy analysis and frame-reflective policy practice. *Knowledge and Policy*, 9(1), 85–104. <https://doi.org/10.1007/BF02832235>
- Rijswijk, K., Klerkx, L., & Turner, J. A. (2019). Digitalisation in the New Zealand agricultural knowledge and innovation system: Initial understandings and emerging organisational responses to digital agriculture. *NJAS-Wageningen Journal of Life Sciences*, 90–91(1), 1–14. <https://doi.org/10.1016/j.njas.2019.100313>
- Roslund, M. I., Puhakka, R., Grönroos, M., Nurminen, N., Oikarinen, S., Gazali, A. M., Cinek, O., Kramná, L., Siter, N., Vari, H. K., Soininen, L., Parajuli, A., Rajaniemi, J., Kinnunen, T., Laitinen, O. H., Hyöty, H., Sinkkonen, A., & ADELE Research Group. (2020). Biodiversity intervention enhances immune regulation and health-associated commensal microbiota among daycare children. *Science Advances*, 6(42), eaba2578. <https://doi.org/10.1126/sciadv.aba2578>
- Sáenz, J., Aramburu, N., Alcalde-Heras, H., & Buenechea-Elberdin, M. (2024). Technical knowledge acquisition modes and environmental sustainability in Spanish organic farms. *Journal of Rural Studies*, 109, 103338. <https://doi.org/10.1016/j.jrurstud.2024.103338>



- Salaisook, P., Faysse, N., & Tsusaka, T. W. (2020). Reasons for adoption of sustainable land management practices in a changing context: A mixed approach in Thailand. *Land Use Policy*, 96, 104676. <https://doi.org/10.1016/j.landusepol.2020.104676>
- Sen, L. T. H., Phuong, L. T. H., Chou, P., Dacuyan, F. B., Nyberg, Y., & Wetterlind, J. (2025). The opportunities and barriers in developing interactive digital extension services for smallholder farmers as a pathway to sustainable agriculture: A systematic review. *Sustainability*, 17(7), 3007. <https://doi.org/10.3390/su17073007>
- Singchai, A. (2023). The knowledge management organic agriculture group in Phetchaburi Province. *Journal of MCU Nakhondhat*, 10(3), 95–107. <https://so03.tci-thaijo.org/index.php/JMND/article/view/268318>
- Suindramedhi, S., Tokuda, H., & Ehara, H. (2016). Rural socio-economic development: A comparative study of Thai and Japanese experiences on organic farming. *GMSARN International Journal*, 10(2), 57–68. <https://gmsarnjournal.com/home/wp-content/uploads/2016/07/vol10no2-3.pdf>
- Šūmane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., des Ios Rios, I., Rivera, M., Chebach, T., & Ashkenazy, A. (2018). Local and farmers' knowledge matters! how integrating informal and formal knowledge enhances sustainable and resilient agriculture. *Journal of Rural Studies*, 59, 232–241. <https://doi.org/10.1016/j.jrurstud.2017.01.020>
- Sumardjo, S., Firmansyah, A., & Dharmawan, L. (2022). Organic farming for sustainable development in peri-urban community. In *Proceedings of the 2nd international conference on rural socio-economic transformation: Agrarian, ecology, communication and community development perspectives, RUSSET 2021, Bogor, West Java, Indonesia, September 14–15, 2021* (pp. 166–178). <https://doi.org/10.4108/eai.14-9-2021.2317171>
- Taylor, E. W. (2008). Transformative learning theory. *New Directions for Adult and Continuing Education*, 2008(119), 5–15. <https://doi.org/10.1002/ace.301>
- Thakur, N., Kaur, S., Kaur, T., Tomar, P., Devi, R., Thakur, S., Tyagi, N., Thakur, R. K., Mehta, D. K., & Yadav, A. N. (2022). Organic agriculture for agro-environmental sustainability. In R. Soni, D. C. Suyal, A. N. Yadav, & R. Goel (Eds.), *Trends of applied microbiology for sustainable economy* (pp. 699–735). Academic Press. <https://doi.org/10.1016/b978-0-323-91595-3.00018-5>
- Thongdee, V., Promgun, S., Sawadtha, S., Namsithan, S., Thubphumee, P., & Ruangsarn, N. (2022). The development of community learning center 'bue ban' in driving the smart city policy in Khon Kaen, Thailand. *International Journal of Evaluation and Research in Education*, 11(2), 802–809. <http://doi.org/10.11591/ijere.v11i2.22573>
- Thummaphan, P., & Sripa, K. (2023). The learning city development guideline for promoting lifelong learning in Thailand. *Studies in Continuing Education*, 45(2), 228–247. <https://doi.org/10.1080/0158037X.2022.2051472>



- Tikum, K., & Ahmad, M. M. (2024). Challenges of making a new farmer: A case study of Thailand's young smart farmer program. *Development Studies Research*, 11(1), 2414014. <https://doi.org/10.1080/21665095.2024.2414014>
- van der Ploeg, J. D. (2008). *The new peasantries: Struggles for autonomy and sustainability in an era of empire and globalization*. Routledge. <https://doi.org/10.4324/9781849773164>
- Wang, J. (2018). Integrating indigenous with scientific knowledge for the development of sustainable agriculture: Studies in Shaanxi Province. *Asian Journal of Agriculture and Development*, 15(2), 41–58. <https://doi.org/10.37801/ajad2018.15.2.3>
- Widiyanti, E., Irianto, H., & Riptanti, E. W. (2024). Transformative learning and engagement with organic farming: Lessons learned from Indonesia. *Open Agriculture*, 9(1), 20220342. <https://doi.org/10.1515/opag-2022-0342>
- Wiedemann, R., Stamm, C., & Staudacher, P. (2022). Participatory knowledge integration to promote safe pesticide use in Uganda. *Environmental Science & Policy*, 128, 154–164. <https://doi.org/10.1016/j.envsci.2021.11.012>
- Winkler, G., Kaufmann, S., Hruschka, N., & Vogl, C. R. (2024). Participatory guarantee systems: Structure, benefits and reasons for participation – insights from the Italian case study of Campi Aperti. *Frontiers in Sustainable Food Systems*, 8, 1388853. <https://doi.org/10.3389/fsufs.2024.1388853>